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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,443	05/18/2005	Bertrand Saunier	NIH341.001NP	4458

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EXAMINER	
BOESEN, AGNIESZKA	

ART UNIT	PAPER NUMBER
1648	

MAIL DATE	DELIVERY MODE
01/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/524,443	SAUNIER ET AL.	
	Examiner	Art Unit	
	Agnieszka Boesen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,6 and 9-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6 and 9-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 11, 2007 has been entered.

Claims 1-3, 5, 6, and 9-13 are pending and under examination.

Claim Rejections - 35 USC § 102

Rejection of claims 1-3 under 35 U.S.C. 102(b) as being anticipated by Baumert et al. (Journal of Virology, May 1998, IDS of 7/3/2006) as evidenced by US Biological Technical Data Sheet and SIGMA Product Information Sheet **is withdrawn** in view of Applicant's arguments.

However a new rejection is made in view of newly found prior art references.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5, 6, and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis (US Patent 5,521,082) in view of Houghton (US Patent 5,350,671) and Baumert et al. (Journal of Virology, May 1998, IDS of 7/3/2006).

Claims are drawn to a method for isolating infection defective hepatitis C virus (HCV) structural protein complexes from cells infected with a baculovirus encoding and expressing HCV structural proteins, comprising lysing the infected cells to yield a lysate and adding polyethylene glycol to the lysate to form a precipitate that comprises the infection defective HCV structural protein complexes.

Lewis teaches a method of isolating infection defective hepatitis A virus (HAV) structural proteins from cells infected with HAV, comprising lysing the infected cells by incubating the cells in hypotonic buffer, adding polyethylene glycol to the lysate to form a precipitate and fractionating the precipitate by gradient ultracentrifugation (see the entire document, particularly the figure on the face of the Patent, claims 1-6, and column 6, lines 5-29). Lewis does not expressly teach that his method can be used to purify infection defective **HCV** structural protein complexes from cells infected with a **baculovirus** encoding and expressing HCV structural proteins. Lewis does not teach lysing the cells in a buffer containing digitonin and protease inhibitors.

Houghton teaches isolation of HCV particles from cell cultures by precipitation with polyethylene glycol (see column 40, lines 31-41). Houghton does not teach the lysis step of the present method. Houghton teaches baculovirus expression system for expression of viral genomes (see column 47, lines 20-26). Baumert et al. teach isolation of two VLP constructs: E1 and E2-p7, and another VLP construct comprising E1 and E2 without p7 proteins, particles are

50 nm in diameter (see Figure 1, Figure 4 and Materials and Methods –Baculovirus constructs and insects cell cultures, and page 3831). Baumert teaches lysing the cells in a buffer containing digitonin and protease inhibitors (see Materials and Methods). Baumert teaches centrifuging the cell lysate through a cushion comprising sucrose, a disaccharide (see Materials and Methods - Purification of HCV-like particles, and page 3831). Baumert provides evidence that the HCV structural proteins have been successfully expressed using baculovirus expression system.

It would have been obvious to those skilled in the art to provide a method comprising lysing the cells infected with baculovirus expressing HCV structural proteins and to precipitate the HCV viral proteins from the cell lysate with polyethylene glycol. It would have been obvious to the skilled artisan to lyse the cells with hypertonic and hypotonic shock and to adjust the concentration of digitonin to less than or equal to 0.25%, absent unexpected results. It is well know in the art that the hypertonic and hypotonic shock are conditions wherein the cells would be subjected to lysis, which is the objective of the subsequent method step presently claimed and which is taught by Baumert.

One would have been motivated to use Lewis' method to isolate Baumert's infection defective HCV structural proteins because Houghton expressly suggests that HCV particles can be precipitated from cell cultures with polyethylene glycol. One would have been motivated to treat the cells with hypertonic and hypotonic shock for the purpose of lysing the cells and to adjust the concentration of digitonin to less than or equal to 0.25%. Adjusting the concentration of digitonin is merely routine optimization of lysing conditions.

One would have had a reasonable expectation of success to isolate the infection defective HCV structural proteins from cells infected with baculovirus encoding and expressing HCV

structural proteins by precipitation with polyethylene glycol, because polyethylene glycol has been known and used in the art for the precipitation and isolation of viral proteins from virus infected cells as evidenced by Lewis and Houghton.

Therefore the claims would have been *prima facie* obvious to the skilled artisan at the time when the invention was made.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agnieszka Boesen whose telephone number is 571-272-8035. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AB
Agnieszka Boesen, Ph.D.

/Stacy B. Chen/ 1-4-08
Primary Examiner, TC1600